at least one accelerometer mounted on the sensor head for generating a signal corresponding to the angular orientation of the sensor head with respect to the first shaft, and

a microprocessor for processing the signal generated by the at least one accelerometer, operable to provide an output corresponding to the angular position of the sensor head relative to the first shaft.

Claim 12. (Once Amended) In an alignment system for aligning a centerline of a first shaft with a centerline of a second shaft, the shaft alignment system including an analyzer having memory, a mounting bracket having engagement surfaces for engaging the first shaft and securing the bracket to the first shaft, a sensor head having a facing surface and a rear surface in opposing relation disposed on the mounting bracket and extending in a substantially perpendicular orientation with respect to the centerline of the first shaft, a collimated light source mounted on the sensor head for transmitting a beam of energy in a direction that is substantially parallel to the first shaft, and a photosensitive sensor mounted on the sensor head for sensing light and generating a position signal corresponding to a position of a light beam impinging upon the photosensitive sensor, an angular position sensing apparatus comprising:

at least one accelerometer for generating a signal corresponding to the angular orientation of the sensor head with respect to the first shaft, and

a microprocessor for processing the signal generated by the at least one accelerometer, wherein the microprocessor further comprises an angle processing module for determining a current head quadrant location and determining the angular position of the sensor head based in part on the quadrant location, the microprocessor providing an output corresponding to the angular position of the sensor head relative to the first shaft.

Claim 15. (Once Amended) In an alignment system for aligning a centerline of a first shaft with a centerline of a second shaft, the shaft alignment system including an analyzer having memory, a mounting bracket having engagement surfaces for engaging the first shaft and securing the bracket to the first shaft, a sensor head having a facing surface and a rear surface in opposing relation disposed on the mounting bracket and extending in a substantially perpendicular orientation with respect to the centerline of the first shaft, a collimated light source mounted on the sensor head for transmitting a beam of energy in a direction that is substantially parallel to the first shaft, and a photosensitive sensor mounted

on the sensor head for sensing light and generating a position signal corresponding to a position of a light beam impinging upon the photosensitive sensor, an angular position sensing apparatus comprising:

a first dual-axis accelerometer having a first sensing axis for sensing a first acceleration component and a second sensing axis for sensing a second acceleration component, wherein the first and second sensing axes are in substantially perpendicular relation, the first dual-axis accelerometer operable to output a first signal proportional to the sensed first acceleration component and to output a second signal proportional to the sensed second acceleration component,

a second dual-axis accelerometer having a third sensing axis for sensing a third acceleration component and a fourth sensing axis for sensing a fourth acceleration component, wherein the third and fourth sensing axes are in substantially perpendicular relation, the second dual-axis accelerometer operable to output a third signal proportional to the sensed third acceleration component and to output a fourth signal proportional to the sensed fourth acceleration component, the first and second dual-axis accelerometers mounted in spaced apart relation defining a plane of reference, and

a microprocessor for processing the signals generated by the first and second dual-axis accelerometers, operable to provide an output corresponding to the angular position of the sensor head relative to the first shaft.

Claim 17. (Once Amended) The angular position sensing apparatus of Claim 16 wherein the fifth signal corresponds to a first sine wave function and the sixth signal corresponds to a second sine wave function ninety degrees out of phase with respect to the first sine wave function, wherein the microprocessor determines the angular position of the body based on a most linear region of the first or second sine waves.

Claim 23. (new) The angular position sensing apparatus of claim 15 further comprising processing features for processing the signals from the first and second dual-axis accelerometers to correct for centrifugal and angular acceleration effects.

Claim 24. (new) In an alignment system for aligning a first shaft, a sensing apparatus comprising:

a sensor head coupled to the first shaft,

a collimated light source disposed on the sensor head for transmitting an energy beam,

a photosensitive sensor disposed on the sensor head for sensing light and generating a position signal therefrom,

at least one accelerometer disposed on the sensor head for generating a signal corresponding to the angular orientation of the sensor head with respect to the first shaft, and

a processor for processing the signal generated by the at least one accelerometer, operable to provide an output corresponding to the angular position of the sensor head relative to the first shaft.

Claim 25. (new) The sensing apparatus of claim 19 further comprising:

a first dual-axis accelerometer having a first sensing axis for sensing a first acceleration component and a second sensing axis for sensing a second acceleration component, wherein the first and second sensing axes are in substantially perpendicular relation, the first dual-axis accelerometer operable to output a first signal proportional to the sensed first acceleration component and to output a second signal proportional to the sensed second acceleration component, and

a second dual-axis accelerometer having a third sensing axis for sensing a third acceleration component and a fourth sensing axis for sensing a fourth acceleration component, wherein the third and fourth sensing axes are in substantially perpendicular relation, the second dual-axis accelerometer operable to output a third signal proportional to the sensed third acceleration component and to output a fourth signal proportional to the sensed fourth acceleration component.

REMARKS

Claims 11-17 are in the case and stand rejected. Claims 11, 12, 15, and 17 are hereby amended. Applicants appreciate the Examiner's acknowledgement that claims 12 and 15-17 would be allowed if rewritten in independent form to include all of the limitations of the base claim and any intervening claims. Thus, Applicants have amended claims 12 and 15 per the Examination's recommendation. Amended claim 11 provides clarification as to the location of the at least one accelerometer and the sensor head. Amended claim 17 corrects a formal